AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Canceled)

2. (Previously Presented) The apparatus according to claim 20, wherein:

the light emerging port has the form of a circle and is disposed in a middle of a light incident plane;

the first light incident port has the form of a ring and is disposed on an outside of the light emerging port; and

the second light incident port has the form of a ring and is disposed on an outside of the first light incident port.

3. (Previously Presented) A bilirubin concentration measuring apparatus, comprising:

a light emitter for emitting a light which includes a first luminous flux falling in a first wavelength range and a second luminous flux falling in a second wavelength range, their bilirubin absorption coefficients differing from each other;

a light emerging port for projecting the first and second luminous fluxes onto skin of a person;

a first light incident port for allowing the first and second luminous fluxes having been diffused in the skin to pass therethrough;

a second light incident port for allowing the first and second luminous fluxes having been diffused in the skin to pass therethrough, the second light incident port being spaced away from the light emerging port a different distance than the first light incident port;

a first electric signal generator for generating a first electric signal corresponding to an intensity of the first luminous flux passed through the first light incident port, and a second electric signal corresponding to an intensity of the second luminous flux passed through the first light incident port;

a second electric signal generator for generating a third electric signal corresponding to an intensity of the first luminous flux passed through the second light incident port, and a fourth electric signal corresponding to an intensity of the second luminous flux passed through the second light incident port; and

a calculator for calculating a bilirubin concentration based on the first to fourth electric signals wherein:

the first light incident port has the form of a circle and is disposed in a middle of a light incident plane;

the light emerging port has the form of a ring and is disposed on an outside of the first light incident port; and

the second light incident port has the form of a ring and is disposed on an outside of the light emerging port.

4. (Currently Amended) The apparatus according to claim 20, wherein:

the light emitter includes a white light source operable to emit [[whit]] white light containing the first and second luminous fluxes;

the first signal generator includes:

a first light splitter for splitting the diffused luminous fluxes passed through the first light incident port into the first luminous flux and the second luminous flux;

a first photoelectric conversion device for generating the first electric signal corresponding to the intensity of the first luminous flux split by the first light splitter; and

a second photoelectric conversion device for generating the second electric signal corresponding to the intensity of the second luminous flux split by the first light splitter; and

the second signal generator includes:

a second light splitter for splitting the diffused luminous fluxes passed through the

second light incident port into the first luminous flux and the second luminous flux; a third photoelectric conversion device for generating the third electric signal corresponding to the intensity of the first luminous flux split by the second light splitter; and

a fourth photoelectric conversion device for generating the fourth electric signal corresponding to the intensity of the second luminous flux split by the second light splitter.

5. (Previously Presented) The apparatus according to claim 4, further comprising:

a first light guiding member for guiding the diffused luminous fluxes passed through the first light incident port to the first light splitter; and

a second light guiding member for guiding the diffused luminous fluxes passed through the second light incident port to the second light splitter.

6. (Previously Presented) The apparatus according to claim 20, further comprising:

an emission controller for controlling the emission of the light emitter, wherein

the light emitter includes:

a first light source operable to emit the first luminous flux; and

a second light source operable to emit the second luminous flux;

the emission controller controls the first and second light sources to emit the first and second luminous fluxes separately;

the first electric signal generator includes a first photoelectric conversion device operable to individually generate the first and second electric signals based on the first and second luminous fluxes separately passed through the first light incident port; and

the second electric signal generator includes a second photoelectric conversion device operable to individually generate the third and fourth electric signals based on the first and second luminous fluxes separately passed through the second light incident port.

7. (Previously Presented) The apparatus according to claim 6, further comprising:

a first light guiding member for guiding the diffused luminous fluxes passed through the first light incident port to the first photoelectric conversion device; and

a second light guiding member for guiding the diffused luminous fluxes passed through the second light incident port to the second photoelectric conversion device.

8. (Previously Presented) The apparatus according to claim 6, wherein the first light source includes a blue light emitting diode, and the second light source includes a green light emitting diode or a red light emitting diode.

9. (Currently Amended) The apparatus according to claim] 20, wherein the first luminous flux is absorbable by bilirubin, and the second luminous flux is hardly absorbable by bilirubin.

10. (Currently Amended) [[An]] The apparatus according to claim 20, further comprising a memory for storing first to fourth constants corresponding to the first to fourth electric signals, respectively, wherein the calculator executes:

calculation of first to fourth products by multiplying the first to fourth electric signals by the first to fourth constants;

calculation of a first logarithmic number of a quotient obtained by division of the second product by the first product;

calculation of a second logarithmic number of a quotient obtained by division of the fourth product by the third product; and

calculation of a bilirubin concentration based on a difference between the calculated two logarithmic numbers.

11. (Previously Presented) The apparatus according to claim 10, further comprising:

a constant calculator for calculating the first to fourth constants; and

a storage controller for controlling storage of the calculated first to fourth constants in the memory, wherein the constant calculator calculates the first to fourth constants to assure the following relationships:

1) a product of a first white electric signal and the first constant is equal to a product of a second white electric signal and the second constant; and

2) a product of a third white electric signal and the third constant is equal to a product of a fourth white electric signal and the fourth constant,

wherein the first to fourth white electric signals are first to second electric signals which are obtained under conditions where the first and second luminous fluxes are projected onto a white diffuser having no wavelength dependency, and the first and second luminous fluxes from

the white diffuser are received after having passed through the first and second light incident ports.

12. (Previously Presented) The apparatus according to claim] 20, further comprising:

a projection operable to come into contact with skin of a person, the projection having a light-blocked potion and a non-light-blocked portion, wherein

the light emerging port, and the first and second light incident ports are provided in the non-light-blocked portion of the projection.

Claims 13-19 (Canceled)

20. (Currently Amended) A bilirubin concentration measuring apparatus, comprising:

(a) a light emitter for emitting a light which includes a first luminous flux falling in a first wavelength range and a second luminous flux falling in a second wavelength range, their bilirubin absorption coefficients differing from each other;

(b) a light emerging port for projecting the light including the first and second luminous fluxes from the light emitter onto skin of a person for entering thereinto;

(c) a first light incident port for allowing the first and second luminous fluxes having been diffused in tissues of the person to pass therethrough;

(d) a second light incident port for allowing the first and second luminous fluxes having been diffused in tissues of the person to pass therethrough, the second light incident port being

spaced away from the light emerging port a different distance than the first light incident port, so that optical path length of luminous fluxes which pass through the first light incident port and optical path length of luminous fluxes which pass through the second light incident port are different from each other;

(e) a first electric signal generator for generating a first electric signal corresponding to an intensity of the first luminous flux passed through the first light incident port, and a second electric signal corresponding to an intensity of the second luminous flux passed through the first light incident port;

(f) a second electric signal generator for generating a third electric signal corresponding to an intensity of the first luminous flux passed through the second light incident port, and a fourth electric signal corresponding to an intensity of the second luminous flux passed through the second light incident port; and

(g) a calculator for calculating a bilirubin concentration based on the first to fourth electric signals ~~so~~ that includes a processor that cancels the influence of skin ~~is cancelled~~ by using the luminous fluxes of the different optical path length.

21. (Previously Presented) A bilirubin concentration measuring apparatus, comprising:

(a) a light emitter for emitting a light which includes a first luminous flux falling in a first wavelength range and a second luminous flux falling in a second wavelength range, their bilirubin absorption coefficients differing from each other;

(b) a light emerging port for projecting the light including the first and second luminous fluxes from the light emitter onto skin of a person for entering thereinto;

(c) a first light incident port for allowing the first and second luminous fluxes having been diffused in tissues of the person to pass therethrough;

(d) a second light incident port for allowing the first and second luminous fluxes having been diffused in tissues of the person to pass therethrough, wherein the first light incident port and the second light incident port have forms of ring or circle having relative different radii so that the second light incident port being spaced away from the light emerging port a different distance than the first light incident port;

(e) a first electric signal generator for generating a first electric signal corresponding to an intensity of the first luminous flux passed through the first light incident port, and a second electric signal corresponding to an intensity of the second luminous flux passed through the first light incident port;

(f) a second electric signal generator for generating a third electric signal corresponding to an intensity of the first luminous flux passed through the second light incident port, and a fourth electric signal corresponding to an intensity of the second luminous flux passed through the second light incident port; and

(g) a calculator for calculating a bilirubin concentration based on the first to fourth electric signals.

22. (Currently Amended) The apparatus according to claim 21, wherein:

the light emitter includes a white light source operable to emit [[whit]] white light containing the first and second luminous fluxes;

the first signal generator includes:

a first light splitter for splitting the diffused luminous fluxes passed through the first light incident port into the first luminous flux and the second luminous flux;

a first photoelectric conversion device for generating the first electric signal corresponding to the intensity of the first luminous flux split by the first light splitter; and

a second photoelectric conversion device for generating the second electric signal corresponding to the intensity of the second luminous flux split by the first light splitter; and

the second signal generator includes:

a second light splitter for splitting the diffused luminous fluxes passed through the second light incident port into the first luminous flux and the second luminous flux;

a third photoelectric conversion device for generating the third electric signal corresponding to the intensity of the first luminous flux split by the second light splitter; and

a fourth photoelectric conversion device for generating the fourth electric signal corresponding to the intensity of the second luminous flux split by the second light splitter.

23. (Previously Presented) The apparatus according to claim 21, further comprising:

an emission controller for controlling the emission of the light emitter, wherein

the light emitter includes:

a first light source operable to emit the first luminous flux; and

a second light source operable to emit the second luminous flux;

the emission controller controls the first and second light sources to emit the first and second luminous fluxes separately;

the first electric signal generator includes a first photoelectric conversion device operable to individually generate the first and second electric signals based on the first and second luminous fluxes separately passed through the first light incident port; and the second electric signal generator includes a second photoelectric conversion device operable to individually generate the third and fourth electric signals based on the first and second luminous fluxes separately passed through the second light incident port.

24. (Currently Amended) The apparatus according to claim 21, wherein the first luminous flux is absorbable by bilirubin, and the second luminous flux is hardly absorbable by bilirubin.

25. (Currently Amended) [[An]] The apparatus according to claim 21, further comprising a memory for storing first to fourth constants corresponding to the first to fourth electric signals, respectively, wherein the calculator executes:

calculation of first to fourth products by multiplying the first to fourth electric signals by the first to fourth constants;

calculation of a first logarithmic number of a quotient obtained by division of the second product by the first product;

calculation of a second logarithmic number of a quotient obtained by division of the fourth product by the third product; and

calculation of a bilirubin concentration based on a difference between the calculated two logarithmic numbers.

26. (Previously Presented) The apparatus according to claim 21, further comprising:

a projection operable to come into contact with skin of a person, the projection having a light-blocked potion and a non-light-blocked portion, wherein

the light emerging port, and the first and second light incident ports are provided in the non-light-blocked portion of the projection.